

Final Performance Report for NAG5-8511

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Introduction

The Johns Hopkins University and Space Telescope Science Institute are working together on this project to develop a library of standard software for data archives that will benefit the wider astronomical community. The ultimate goal was to develop and distribute a software library aimed at providing a common system for partitioning and indexing the sky in manageable sized regions and provide complex queries on the objects stored in this system. Whilst ongoing maintenance work will continue the primary goal has been completed. Most of the next generation sky surveys in the different wavelengths like 2MASS, GALEX, SDSS, GSC-II, DPOSS and FIRST have agreed on this common set of utilities. In this final report, we summarize work on the work elements assigned to the STScI project team.

Activities completed during the project

Following extensive discussions with software developers from all major institutions involved (including STScI, JHU, NOAO, NRAO, SAO, GSFC, 2MASS, CADR, CDS and ESO), the design requirements for this software library were derived.

A set of JAVA classes for the HTM (Hierarchical Triangulated Mesh) algorithm was developed and published to the community. This has been actively maintained and tested on the major platforms used by the astronomical community. (The JHU activities have included ports of this library to C++ and C# languages). These classes were enhanced to allow use as a web-service and we were successful in providing VO compliant queries to our datasets as soon as the initial VO interchange standards were defined.

In addition, a prototype JAVA based GUI interface to a number of publicly accessible data sources including the DSS (Digitized Sky Survey), GSC-II (Guide Star Catalog) and SDSS was developed. The GSC-II is an operational database that is partitioned using the HTM technology and was our primary resource for testing.

These software tools are available and the HTM library has become an integral part of the major astronomical databases and the VO (Virtual Observatory) initiative.

The grant funding was used for the following purposes:

- Consultants to derive and implement the software library
- Software licenses required to develop and maintain the library
- Travel to ADASS meetings for consultant to meet with software developers
- Laptop to demo software at developer meetings